

DETAILED ACTION

Claim Objections

1. Claims 7, and 39 are objected to because of the following informalities:
As to claim 7, "probe bins" recited in line 7 should read --- probe pins---
As to claim 39, "probe bins" recited in line 6 should read --- probe pins---
Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
3. Claims 3, 7, 22, 25, and 34-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida et al. (u.s.p 6,710,608 heretoafter Yoshida).

As to claim 7, Yoshida discloses in Figs. 16-43, a probe module for testing an LCD panel having a plurality of test pointes (col. 25, lines 40-45) comprising: a probe

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base (116E, 301E, 300E) having a plurality of conductive metal traces (301E, 300E); a plurality of completely exposed probe pins (3aE) attached to the probe base, each of probe pins comprising an elongated body (3E) wherein at least part of the elongated body is bonded to the plurality of conductive metal traces (301E, and portion after 301E) of the probe base; a flexible circuit interconnect device (300E) for connecting the plurality of probe pins to an inspection apparatus (inherent); and a flexible compression arm (111E, 400E) attached to the probe base (via 130E) and configured to engage the plurality of probe pins (fig. 20); and at least one adjustment element (130E) provided on the probe base configured to adjust a pressure of the compression arm (112E) against the plurality of probe pins (3aE) during testing of the LCD panel respect to the test points (col. 25, lines 40-45).

Yoshida is silent about the adjusting of the contact angle of the probe pins.

Note that, the bolt 130E in combination with 112E and the elastic film 400E as shown in Figs. 20-24 would press on the end portion of contact pins 3aE bent in the S, S1, and S2 positions (as shown in Figs. 20-24) for good contact to the terminals of DUT (col. 2, lines 47-52, and col. 25, lines 30-40). Therefore, it would have been obvious to a person having an ordinary skill in the art at the time of the invention was made to recognize that when the compression arm is pressed against the plurality of the probe pins by the tightening of the adjustment element (130E), the contact angle of the probe pins is accordingly changed in positions (as shown in Figs. 20-24) for good contact to the terminals of DUT (col. 25, lines 30-40).

As to claim 3, Yoshida discloses in Figs. 16-24, the circuit interconnect device (300E) comprises a plurality of conductive probe circuits (col. 24, lines 45-55) provided on the probe base in electrical contact with the plurality of probe pins (3aE), respectively, and a flexible circuit board (ribbon cable after 300E).

As to claim 22, Yoshida discloses in Figs. 16-24, the flexible circuit board (ribbon cable after 300E) couples the probe pins (3aE) to a testing unit (inherent) via the conductive metal traces (300E).

As to claim 25, Yoshida discloses in Figs. 16-24, the probe pins (3aE) include an elongated (3E) arm body (fig. 17) such that at least a part of the elongated arm body is attached with the probe base (116E).

As to claim 34, Yoshida discloses in Figs. 16-24, the adjustment element is a screw (130E).

As to claim 35, Yoshida discloses in Figs. 16-24, the flexible compression arm comprises plastic (400E).

As to claim 36, Yoshida discloses in Figs. 16-24, the flexible compression arm comprises metal (111E).

As to claim 37, it is well-known that the pitch between adjacent ones of the plurality of the probe pins is about 30 μm in order to correspond to the pads of the DUT during test. Furthermore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to choose appropriate value of the pitch between adjacent ones of the plurality of the probe pins is about 30 μm for the benefit of corresponding between the probe pins to the pads of the DUT during test, since it has

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been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

As to claim 38, Yoshida discloses in Figs. 16-43, wherein the adjustment element is a micro-adjustable adjustment screw (130E).

As to claim 39, Yoshida discloses in Figs. 16-24, a probe module for testing an LCD panel having a plurality of test pointes (col. 25, lines 40-45) comprising: a probe base (116E, 301E, 300E) having a plurality of conductive metal traces (301E, 300E); a plurality of completely exposed probe pins (3aE) attached to the probe base, each of probe pins comprising an elongated body (3E) wherein at least part of the elongated body is bonded to the plurality of conductive metal traces (301E, and portion after 301E) of the probe base; a flexible circuit interconnect device (300E) for connecting the plurality of probe pins to an inspection apparatus (inherent); and a flexible compression arm (111E, 400E) attached to the probe base (via 130E) and configured to engage the plurality of probe pins (fig. 20); and at least one adjustment element (130E) provided on the probe base for adjustably increasing and decreasing a pressure of the compression arm (112E) against the plurality of probe pins (3aE) during testing of the LCD panel respect to the test points (col. 25, lines 40-45) so as to adjust a pressure of the probe pins on the test points (col. 2, lines 47-52, and col. 30, lines 25-37).

Yoshida is silent about the adjusting of the contact angle of the probe pins.

Note that, the bolt 130E in combination with 112E and the elastic film 400E as shown in Figs. 20-24 would press on the end portion of contact pins 3aE bent in the S, S1, and S2 positions (as shown in Figs. 20-24) for good contact to the terminals of DUT

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(col. 25, lines 30-40). Therefore, it would have been obvious to a person having an ordinary skill in the art at the time of the invention was made to recognize that when the compression arm is pressed against the plurality of the probe pins by the tightening of the adjustment element (130E), the contact angle of the probe pins is accordingly changed in positions (as shown in Figs. 20-24) for good contact to the terminals of DUT (col. 2, lines 47-52, and col. 25, lines 30-40).

4. Claims 2, 5, 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida et al. (u.s.p 6,710,608 heretoeafter Yoshida), in view of Farworth (u.s.p 6,362,642 heretoeafter Farworth).

Yoshida discloses in Figs. 16-43, all of the claimed limitations except for a probe pin head having a generally tapered probe pin tip, or semi-spherical probe pin tip. However, Farworth disclose in Figs. 9-10, the pogo pin having a tapered or semi-spherical probe pin tip (14) for easily contacting a pin of device under test (8). Therefore, it would have been obvious to one having an ordinary skill in the art at the time of the invention was made to modify the probe of Yoshida, and provide the probe with tapered or semi-spherical tip, as taught by Farworth for easily contacting a pin of device under test during testing (8).

5. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida et al. (u.s.p 6,710,608 heretoeafter Yoshida); in view of Di Stefano (u.s.p 6,426,638 heretoeafter Di Stefano).

As to claim 13, Yoshida discloses in Figs. 16-20, all of the claimed limitations except for a plurality of probe pins with a tetrahedral probe pin tip. However, Di Stefano

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discloses in Figs. 3A, a probe pins with a tetrahedral probe pin tip for a strong contact between the probe and device under test. Therefore, it would have been obvious to one having an ordinary skill in the art at the time of the invention was made to modify the probe of Yoshida, and provide the probe with a tetrahedral tip, as taught by Di Stefano for firmly contacting the device under test during testing.

Response to Arguments

6. The RCE filed on 11/7/08 with respect to newly adding claims 7, 38-39 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TUNG X. NGUYEN whose telephone number is (571)272-1967. The examiner can normally be reached on 8:30am-5:00pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ha T. Nguyen can be reached on (571) 272-1678. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/T. X. N./

Examiner, Art Unit 2829

/Ha T. Nguyen/

Supervisory Patent Examiner, Art Unit 2829